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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,214	09/25/2000	Christine E. Browning	9010-3	4277
20792	7590	01/19/2006	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			NEGIN, RUSSELL SCOTT	
PO BOX 37428			ART UNIT	PAPER NUMBER
RALEIGH, NC 27627			1631	

DATE MAILED: 01/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/670,214	BROWNING ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Russell S. Negin	1631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 11 October 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 2-16,26-39,48-61 and 87-101 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 2-16,26-39,48-61 and 87-101 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

In view of the appeal brief filed on October 11, 2005, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

*Ardin H. Marschel 1/13/06*  
**ARDIN H. MARSCHEL**  
**SUPERVISORY PATENT EXAMINER**

Ardin Marschel, SPE

***Claims Under Investigation***

Claims 2-16, 26-39, 48-61, and 87-101 are currently pending and are under investigation.

***Current Rejection Status***

The rejection of claims 2-16, 26-39, 48-61, and 87-101 under 35 U.S.C. 101 is withdrawn due to arguments made by the applicant in the remarks of October 11, 2005 on pages 3-10.

The rejection of claims 2-7, 10, 11, 15, 16, 26-32, 35, 36, 38, 39, 48-54, 57, 58, 60, 61, and 87-101 under 35 U.S.C. 103 over Herrington (1996) in combination with Heinlein [USPAT 5,950,217] is withdrawn due to arguments made by the applicant in the remarks of October 11, 2005 on pages 13-15,

The rejection of claims 2-16, 26-39, 48-61, and 87-101 under 35 U.S.C. 103 over Herrington (1996) in combination with Heinlein [USPAT 5,950,217] taken with Occupational Safety and Health Administration (61:56746-56856; November 4, 1996) is withdrawn due to arguments made by the applicant in the remarks of October 11, 2005 on pages 13-15.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5-7, 10-11, 28-32, 35-36, 50-54, 57-58, 61, 87-90, 92-95, and 97-100 are rejected under 35 U.S.C. 102(b) as being anticipated by Catena et al. [OH&S Canada, September/October 1992, volume 8, issue 5, pages 72-78].

Claim 87 states:

87. A method of conducting a process hazard analysis (PHA), comprising the following steps that are performed in a data processing system:  
selecting a chemical process to be evaluated;  
selecting a study type to be performed on the chemical process;  
conducting the selected study type on the chemical process in the data processing system, wherein the chemical process is evaluated in the data processing system for the presence of a hazard scenario;  
generating a resolution plan to the hazard scenario in the data processing system, wherein the resolution plan comprises a final action item, at least one interim action item to be completed prior to the completion of the final action item and at least one target date for completing an action item; and  
tracking the resolution plan in the data processing system, to monitor for completion of action items, wherein the status of the resolution plan is monitored for completion of action items by the target date.

Claim 92 and 97 are a data processing system and computer program product for conducting the same body of the method of instant claim 87, respectively.

Claims 6, 29, 31, 35, 51, 57, and 53 claim an initial study as part of either a study type, a selecting means, or a conducting means for a method or computer readable code.

Claims 5, 7, 32, and 54 refer to dividing the process into nodes prior to the conducting step.

Claim 10 claims the step of customizing the study step prior to the conducting step.

Claim 11 claims a customizing step comprising a list of questions to evaluate the chemical process.

Claims 28, 30, 50, and 52 claim a selecting or conducting means comprising a means for selecting a revalidation study as a method or computer programming device.

Claim 61 is a computer program product for generating a resolution plan for the hazard scenario.

Claims 88, 93, and 98 claim a method further comprising the step of generating at least one report.

Claims 89, 94, and 99 claim that this report comprises a description of the hazard scenario and resolution plan.

Claims 90, 95, and 100 claim the generation of a resolution database for a resolution plan.

The preamble and first two steps of instant claim 87 are anticipated by Catena et al., page 73 under the first sentence in "Taking Stock," which states, "At any processing operation, accurate, and field verified piping and instrument diagrams are essential to permit a meaningful process hazard analysis (PHA) or emission release to be done." Thus, this statement indicates conducting meaningful PHAs on the chemical process of piping and instrument diagrams (PIDs). Piping is a chemical process in that it enables reaction and transportation of chemicals in a chemical engineering system. The main study to be performed is on process hazards or emission release.

The third through fifth steps of claim 87 are anticipated by passages in Catena et al. on pages 74 (column 2: lines 5-15 and lines 41-45) and 75 lines (column 2, last four lines).

The passages of Catena et al. state:

The major steps of a piping and instrumentation diagram update are:

*Passage #1: page 74, column 2, lines 5-15*  
Determining intelligent PID standards and data definition;

Gathering existing PIDs  
Verifying process unit field information and PID field mark-ups;  
Drawing computer aided designs of PIDs;  
Engineering review of process and instrumentation;  
Selecting database, design, and configuration;  
Standardizing report design;  
Reviewing and updating final PIDs; and  
Maintaining the database and updating the diagrams.

*Passage #2: page 74, column 2, lines 41-45*

This method often does not place critical process units on the same drawing, which then hinders their use especially when performing a HAZOP analysis.

Rearrangement of the diagrams in process-flow order can be done without too much difficulty, if planned for in advance.

*Passage #3: page 75, column 2, last four lines*

The amount of time required to produce a complete field-verified, intelligent piping and instrumentation diagram has ranged from 20 to more than 80 hours per drawing.

Passage #1 anticipates the third method steps by showing a selected study type can be performed on a data processing system. Passage #2 indicates that this step is for HAZOP [hazard and operability analysis].

This method is also used a resolution plan as the last sentence of passage #2 indicates with the “rearrangement” procedure.

The tracking and target date aspects of fifth and fourth steps of claim 87, respectively are indicated in the third passage, with the target date [or time] being from 20 to more than 80 hours per drawing.

Claims 92 and 97 are also anticipated in Catena et al., page 76, the first paragraph under “The Database.”

The selected database should be an off-the-shelf, widely used, fully programmable relational database, such as Paradox<sup>TM</sup>, R:Base<sup>TM</sup>, and dBase<sup>TM</sup> programs. As well, spreadsheets such as Lotus 1-2-3<sup>TM</sup> can be used for specialized reports. The use of

standard relational database software allows flexibility in the design of plant-specific data stored and in its reporting.

Thus this passage qualifies database systems and computer software to the method claimed in instant claim 87.

Claims 6, 29, 31, 35, 51, 57, and 53 are anticipated by the quotation in large print on page 73, which states, "Creating and using intelligent piping and instrument diagrams of refineries and chemical plants isn't just good planning, it's good safety." The concept of "creating" indicates an initial study.

Claims 5, 7, 32, and 54 are anticipated in that each pipe can be considered a node. According to the definition in the instant specification on page 4, lines 28-32, which states, "Based on available process information such as Piping & Instrumentation Diagrams 30 (PID's), known chemical procedures, chemical hazard information and the like, the process to be evaluated then may be broken into sub-processes or segments called "nodes," as defined further herein." A pipe is a segment in a pipeline.

Claim 10 is anticipated in the bullet lists at the top of the second column on page 74 of Catena et al., which states, "The major steps of a piping and instrumentation diagram update are: determining intelligent PID standards and data definition."

Claim 11 is anticipated on page 77 of Catena et al., where a checklist of required information is presented, with one item being in the form of a question (page 77, column 1. lines 3-4), "Are serial numbers needed for each piece of equipment?"

Claims 28, 30, 50, and 52 are anticipated on page 73, the third sentence under "Taking Stock," which states, "Many companies that have started to update their old

PIDs have found the process far more difficult, time consuming and expensive than they ever imagined." Thus, the "updating" of PIDs is a form of revalidation.

Claim 61 is anticipated on page 74, column 1, lines 19-22, which state, "Intelligent piping and instrument diagrams can be used to support hazard and operability analysis (HAZOP), failure mode and effects analysis (FMEA), fault tree analysis, and other sophisticated risk analysis programs."

This HAZOP analysis is indicative of a report which can be used to assist in resolution plan and hazard scenario. Claims 88, 89, 93, 94, 98, and 99 are thus, anticipated.

Claims 90, 95, and 100 are anticipated in the last paragraph of "The Database" section of page 76, which states, "In addition to supporting the original engineering users, the drawings and database can be used to improve operator process and safety awareness, to assist in operator training, to help plan and support plant maintenance, or to plan plant 'turnarounds.'"

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 4, 15, 16, 26, 27, 38, 39, 48, 49, 55, 60, 90-92, 96, 97, 100-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Catena et al. in view of Herrington [Process Safety Progress, volume 15, 1996, pp. 110-113].

Claims 2 and 26 claim groups to which the study type is selected, including the Tennessee Eastman Division Process Hazard Analysis (TEDPHA).

Claims 15, 38, 48, 55, and 60 claim documentation of the hazard scenario and resolution plans.

Claims 16 and 39 claims where the resolution plan encompasses more than one action item.

Claims 91, 96, and 101 contain information on contacts to reach to execute the resolution plan.

Claims 4, 27, and 49 relate to a "Worst Case Credible Consequence hazard scenario.

Catena et al. gives information pertinent to the base claims (i.e. a method of conducting a process hazard analysis). The objective of Catena et al. is stated under "Taking Stock" on page 73 of Catena et al. which states, "At any processing operation,

accurate, and field verified piping and instrument diagrams are essential to permit a meaningful process hazard analysis (PHA) or emission release to be done.” However, Catena et al. do not give information on the limitations of the above claims (i.e. the groups from which the study is selected, the hazard scenario, the resolution plan, how to execute the resolution plan).

However, Herrington does teach these limitations. For claims 2 and 26, on lines 32-37 in column 1 on page 110 in Herrington state that the safety risk analysis was performed with the Tennessee Eastman Division of Eastman Chemical Company.

Claims 15, 38, 48, 55, and 60 are described by lines 4-10 on column 1 of page 110 in Herrington which state, “One key provision of the regulation calls for a Mechanical Integrity (MI) program to ensure that process equipment containing and controlling highly hazardous chemicals is maintained to high standards, standards which minimize the chances of accidental release and subsequent injuries or incidents.”

Claims 16 and 39 are described in Figure 1 of Herrington on page 110 as showing more than one action item in the Mechanical Integrity structure plan.

Claims 91, 96, and 101 are described by Herrington in that the approach described is a team based approach, made up of people who can be contacted in the event of a hazard or need for a resolution.

Regarding claims 4, 27, and 49, it would have been obvious to prepare for the worst credible case scenario.

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Thus, it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the pipeline safety method of Catena et al. with the team based approach of Herrington because both studies are motivated by analogous methods of process hazard analysis as methods for investigating chemical processes (Herrington utilizes teams of people while Catena utilizes computer databases). Herrington improves upon the method of Catena by applying a general safety method to specific agencies and scenarios with resolution plans.

Claims 8-9, 12-14, 33-34, 37, 56, 57, 59, 87, 92, and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Catena et al. in view of Summers [Hydrocarbon Asia; October 1997, pages 46, 48].

Claims 8, 9, 33, and 34 claim a risk ranking and a risk matrix as part of a conducting step.

Claims 12-14 claim a risk matrix, a consequence severity, and a frequency of occurrence of a consequence.

In claim 37, the risk matrix is used to evaluate a chemical process.

Claims 56 and 59 are computer readable code for generation and evaluation of a risk matrix.

Catena et al. gives information pertinent to the base claims (i.e. a method of conducting a process hazard analysis). The objective of Catena et al. is stated under "Taking Stock" on page 73 of Catena et al. which states, "At any processing operation, accurate, and field verified piping and instrument diagrams are essential to permit a

meaningful process hazard analysis (PHA) or emission release to be done." However, Catena et al. do not give information on using risk rankings and matrices.

However, Summers shows such a risk matrix on page 48, column 1; this matrix and its uses address the aforementioned claims. Such a plot shows a level of risk ranking and a risk matrix which illustrates consequence severity as a function of event likelihood. In addition, this risk matrix is used to evaluate a chemical process.

It would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the pipeline safety method of Catena et al. with the risk matrix of Summers, thus resulting in the instant invention, because while both Catena et al. and Summers are motivated by the importance of conducting accurate process hazard analyses, Summers elaborates on the method of quantification of risk using risk matrices and rankings.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Catena et al. in view of Wharton et al. [Risk Management Under OSHA's Process Safety Rule and Clean Air Act Amendments of 1990 – Session 76a; AIChE 1993 Spring National Meeting, 1993; Air Products Chemicals Inc.].

Claim 3 claims a PHA which complies with the Process Safety Management (PSM) standard and the Environmental Protection Agency Risk Management Plan (EPA RMP).

Catena et al. gives information pertinent to the base claims (i.e. a method of conducting a process hazard analysis). The objective of Catena et al. is stated under "Taking Stock" on page 73 of Catena et al. which states, "At any processing operation,

accurate, and field verified piping and instrument diagrams are essential to permit a meaningful process hazard analysis (PHA) or emission release to be done." However, while Catena et al. disclose the method of the base claim of a process hazard analysis, they fail to explicitly apply it as a PSM or an EPA RMP.

Wharton et al. state in the third paragraph of the introduction, "The OSHA PSM and the EPA RMP are being coordinated by the agencies. The PSM is intended to protect on-site workers and the RMP is for the protection of the health of the offsite community and the environment." Thus, this statement describes the limitation of dependent claim 3.

Thus, it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the pipeline safety method of Catena et al. with the PSM and EPA RMP of Wharton et al., because while both Catena et al. and Wharton et al. are motivated by applying safety policy, Wharton et al. uses the specific policies of PSM and EPA RMP to regulate process hazard management.

### ***Conclusion***

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The Central PTO Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, Ph.D., whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 7am to 4pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Ardin Marschel, Ph.D., Supervisory Patent Examiner, can be reached at (571) 272-0718.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instrument Examiner, Tina Plunkett, whose telephone number is (571) 272-0549.

Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information on the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

-RSN 1/13/06

RSM 1/13/06

John S. Brusca 13 January 2006

JOHN S. BRUSCA, PH.D  
PRIMARY EXAMINER